מדינת ישראל

משרד ראש הממשלה

גנזך המדינה

A: Agriculture

16 תיק מס'

התנדבות הבוקר - נבלוס ג'

Soil Conservation Board - Bulletin No. 1 - Nablus - Tulkarem Vally -

Report by Mr. Sh. Shaw and Mr. N.A. Pharaon

יולי 1944 - ספטמבר 1945

מחלקה: יד יצחק בן צבי - ירושלים

תיק מס' AF/31/11/41

מיכל מס'

AF/31/11/41. C.S.O.

Subject Soil Conservation Board.
Bulletin No. 1 – Nablus – Tulkarm valley. – Report by Mr. S. H. Shaw and Mr. N. A. Pharaon

Indexed

① Soil Conservation Board – A/31/2/2/41
dated 12.6.44

1/MB

(2) Mr. Evans.

Please recall para.2 of min.(190). The report has been printed vide 192a. I have read it but it does not say what should be done and what is being done. I think the conclusion is obvious and with all respect to the authors and the Soil Conservation Board, the conclusion must have been known before the study was undertaken, viz: MORE TERRACING and more PLANTING.

(Original of min 2. is on A/31/2/2/41)

Why don't they get on with it instead of writing about it?

2. I suggest we write to C.of F. and say that the report has been read with interest, and that we presume from the summary at page 11 that here (as elsewhere) more terracing and planting is required; and if so, may we be informed of the steps that are being taken to carry out the desired action i.e. terracing and planting.

M.B.
16.6.44.

③ Adm Sec C.S.
Y (1a) submitted for info.
Mr Brown is I feel a little over-allergic to the Soil Conservation Board though they are inclined to give the impression of being purely academic. But research must precede action if the latter is to be effective + if action does follow in reasonable time in this case even the use of this high quality paper (in short supply) for printing the report will be better justified.

The D.C. rather than the C of F should be the spur & coordinator in this case + I propose to wait & consider what is the next practical step.

CR 8/7. 10/7

C.S.O. 69.
18950—30,000—16-11-43

(4) Y.E.

1. Submitted for information. I find myself to a a certain extent in agreement with both minutes (2) and (3).

2. I agree with Mr Evans that the D.C's.observations should be invited, but I doubt if he can say much except that industrious and effective terracing depends to a great extent on security of land tenure. For example,in settled areas the cultivators do these things for themselves with little persuasion; in areas where ownership is fragmentary,uncertain or disputed no amount of urging or encouragement will produce results. One sees a good example in the valley between Anebta and Nablus, just east of Anebta: the dividing line between the settled and unsettled area can almost be distinguished by the difference in the quality of cultivation. Another factor is the supply of seedlings for planting.

3. The whole subjedt of terracing was discussed at the D.CC's.conference a week ago. The minutes will be submitted in due course.

10.7.44.

Received & filed on A/2/4/41 pro 2/19/7

Hein 11/7/44

11/7.

11/7

11/7

(5) To Conservator of Forests — 19.7.44

? B.U. 19/8-(5).

(6) Cons. of Forests — F/51/10 — 21.7.44

AP 22/7

? B.U. 19.8.44 - (5).

AP 22/7

(7) S/C - Re folio (6). ? is our letter of 31/5/44; ? and ? is minute of D.C.C. Conference. I have seen it but copy of it and action taken should circle on this file.

(8) Extract from minutes of the 11th meeting of the Dist. Commissioner's Conference held at J'lem on Friday, 30 June, 1944.

(9) Copy of (8) had been sent on A/31/4/41 to D. A+F + C. of F. fi and action — 20.7.44.

(22) D. A. F. — 12. 9. 45

not 14/9

23) Section Clerk

Have we any record of the discussion referred to in §2 of (22)?

R. S. Hy
21.9.43

24) Rajai Eff.

Ref. - m (23)

I have tried to find out whether we had any record of the discussion. It seems that no body in the Registry could remember that we had any.

2. Files, Nos. A/31/4/41 and A/31/41 on the subject of "Control of Grazing" and "Soil Erosion (Prevention) Ordinance" which are both with the U.S.(A), may contain the record ~~in question~~ of the discussion.

? Should I withdraw the files please.

A.B. 28/9.

S.C. ✓

Pl. attach pp. containing notes of Soil Conservation Board

✓ R. S. Hy
1.10.45

P.A.

R. S. Hy
15.10.45

A/31/11/44

19 July, 1944.

District Commissioner,
Samaria District.

1a

I am directed to refer to Bulletin No.1 on the Nablus-Tulkarm Valley issued by the Soil Conservation Board of which no doubt you have a copy and to ask for your advice as to the next practical steps which should be taken to implement the recommendations contained in this interesting Bulletin.

(Sgd.) M. BROWN
CHIEF SECRETARY.

Copy to: Conservator of Forests.

Mr. Brown.
PS.

F|51|10

CHIEF SECRETARY

With the Compliments

GOVERNMENT OF PALESTINE
CHIEF SECRETARY'S OFFICE
JERUSALEM
13 JUN 1944

of the

Soil Conservation Board

Ref. A/31/2/2/41

12.6.1944 of 31st May, 1944

(2 copies)

F/51/10

S.C.B.

DEPARTMENT OF FORESTS,
KATAMON,
JERUSALEM.

21st July, 1944.

in A/31/2/2/41 (191)

Subject:- Nablus Valley Bulletin.
Reference:- Your A/31/2/2/41 of 31.5.44.

CHIEF SECRETARY.

I shall be glad to be informed of your decision as to general publication of this Bulletin.

Conservator of Forests -
Chairman.

(6)

Original ~~on~~ at fol (66) in A/31/4/41 (8)

Extract from minutes of the 11th meeting of the District Commissioner's Conference held at Jerusalem on Friday, 30th June, 1944.

(a) Soil Conservation and Control of Grazing.

Paragraph 2 (a) of minutes of 10th meeting of District Commissioners's Conference of 26.5.44.

It was agreed that the Conservator of Forests in collaboration with the Director of Agriculture, should draw up a statement summarizing as concisely as possible the objects aimed at by soil conservation and grazing control. The meeting considered that such a summary should enable the problem, which was acknowledged to be serious, to be dealt with step by step rather than by one ordinance of wide scope.

MB.

(11)

A/31/11/41

31 July, 1944.

Conservator of Forests.

Fol. (6)

I am directed to refer to your letter No.F/51/10 of the 21st July, 1944, and to convey approval for publication of the Nablus-Tulkarm valley bulletin.

(Sgd.) M. BROWN

CHIEF SECRETARY.

10. In conclusion I would like to lay emphasis on the well recognised fact that no greater impetus can be given to soil conservation measures - terracing, afforestation or grazing control - than by the settlement of rights in the ownership of the land. The greater part of the work of soil conservation must be undertaken not by direct Government works but by the development of private land by the owners thereof. Whatever encouragement we may give to such development, whether by means of prizes or legal penalties or propaganda or by practical demonstration, the progress must be slow and the task an uphill one in the absence of assured rights of ownership. The very valley which is now under discussion provides an excellent demonstration of the truth of this statement. From Nablus to Anebta the hills are bare and rocky; there are no trees and there is very little recent terracing except in the close vicinity of some of the villages and then only to a very limited extent. But from Anebta to Tulkarm the change that has come about in recent years is remarkable. Everywhere there are signs of recent terracing and of fruit tree and olive planting, and around Anebta village itself the work is very extensive. A private nursery for budded olives and fruit trees has been established there. I attribute this development in very large degree to the fact that the lands of Anebta village and from Anebta to Tulkarm were settled some years ago. Settlement operations have not yet touched the rest of the valley. If, therefore, it is decided to select this valley for the concentrated application of soil conservation methods I hope that the Director of Land Settlement may be asked to extend settlement operations therein at an early date. The valley was due for settlement in about 1946 but I understand that the old settlement programme has now been considerably interupted by the decision to proceed with the Jerusalem sub-district in advance of other areas.

D. C. MacGillivray

DISTRICT COMMISSIONER
SAMARIA DISTRICT

Copy to:- Conservator of Forests, Jerusalem.

(d) Propaganda could be specially directed to this valley by Administrative Officers and others.

(e) School gardens. I suggest that the Director of Education be asked to pay special attention to this area in regard to the establishment of gardens around the village schools, the appointment to these schools of teachers having training in agriculture and the demonstration in these gardens of soil erosion measures, such as terracing.

8. Afforestation.

There is practically no natural forest left in the valley which we are considering. The whole area is either cultivated or grazed over or rock. Nearly all of it is claimed either by individuals or as village masha'a. The difficulty of Government afforestation would be to find areas which would be developed by Government without giving rise to claims to ownership. There is little doubt, however, that large areas would fall to Government upon land settlement and it is obviously desirable that land settlement should precede any extensive scheme for afforestation by Government. Nevertheless, certain areas could be found in the valley which have either already been settled and registered in the name of Government or in respect of which there are no serious claims and, given the funds, considerable afforestation work could be undertaken by Government even before land settlement. If the amount which Government is prepared to devote to direct afforestation methods in this area annually over the next five years could be stated, the Conservator of Forests would, in consultation with me, select areas and draw up a programme of work. There is ample scope in this vast valley and as soon as the Senior staff of the Department of Forests is further strengthened the only limitation to forest development would be that of funds.

I think it should also be possible to obtain the planting of a few private or village forests in this area; but it would be desirable to obtain an amendment of Part VI. of the Forest Ordinance before active steps are taken to this end. Please see in this connection Item 113 of the minutes of the District Conference held on 25th August, 1944 and the Conservator of Forests letter to you 6/2/4 of 15th January, 1945.

9. Control of Grazing.

(a) When the Licensing of Shepherds Ordinance has been enacted (see paragraph 2(c) of the minutes of the District Conference held on 28-7-44) I shall recommend its application to parts or to the whole of the Nablus-Tulkarm valley area.

(b) Special attention could be paid to this area in the enforcement of section 385 of the Criminal Code Ordinance which, as recently amended, controls trespass not only on crops but also on stubble and on private grazing.

(c) Encouragement could be given to the establishment of private grazing areas. If old fencing materials from Army salvage could be made available, at nominal prices, it is probable that a number of individual farmers could be persuaded to enclose their land either for grazing or for the planting of trees. Progress in this direction is however likely to be slow until land settlement has been undertaken.

future, serve as a valuable yardstick of achievement. I propose, therefore, if you approve, that our endeavours in this District should be concentrated upon this valley. This does not mean of course that soil erosion measures will not be given general encouragement in other parts of the District as occasion arises.

6. I will now proceed to discuss the practical measures which, it seems to me, should be possible. They fall under three main heads:-

(a) Encouragement of terracing of hill sides.
(b) Afforestation of steep hill sides.
(c) Control of grazing.

I do not add the conservation and development of the water supplies, since, purely as a soil conservation measure, this is of little comparative importance.

7. Encouragement of terracing of hill sides.

1.(1132) — A/8/43.

For convenience I will take seriatim the recommendations made in Mr. Sale's letter F/51/15 of 24th July, 1944.

1(194) — A/8/43 II

(a) Money prizes. The District Commissioners have made certain proposals in Item 172 of the minutes of the Conference held on 24-11-44. If these are approved in principle I recommend that, apart from the amounts allocated for Tulkarm and Nablus sub-districts, a special additional sum of LP.1000 be allocated yearly to provide prizes for terracing in the Nablus - Tulkarm valley. An annual competition on the lines detailed in my letter 1132 of 30th October, 1944, to the District Commissioner, Galilee (with copy to the Administrative Secretary) would be arranged.

1(189) — A/8/43

(b) Supply of fruit trees and olives. The numbers allotted by the Director of Agriculture to the whole of Nablus sub-district during the 1944/45 planting season are as follows:-

Budded olive trees	Nil
Grafted vines	Nil
Miscellaneous fruit trees	400

These represent a fraction of the demand and all have been absorbed by one village. I believe that there is no better way of encouraging terracing at the present time than by the distribution, at reasonable prices, of budded olives and, to a lesser extent, young fruit trees and vines. No one will terrace in these Samaria hill areas unless he can also plant with olives or fruit trees. I suggest therefore that, if it is agreed that work be concentrated on the Nablus-Tulkarm valley, the Director of Agriculture be requested to give priority to the needs of this valley when distributing olives and fruit trees in the next few years. I understand that the Director has in mind the extension of the Horticultural Station at Nablus and the establishment there of a special olive centre where considerable numbers of budded olive trees can be produced and demonstrations of picking, oil pressing, etc. given. Such a centre at the head of this selected valley would be of tremendous value and I hope the project will be approved and pressed on with all possible speed.

(c) Pre-settlement partition. Given the staff progress could be made here. The best results have been achieved in the past by a District Officer and an Agricultural Officer working together. Despite representations and special provision in the 1944/45 estimates no Agricultural Officer for Samaria(with headquarters at Nablus) has yet been appointed. If one should be appointed I would endeavour to release a District Officer for some weeks or months for special duty, in conjunction with the Agricultural Officer, on pre-settlement partition operations in this area. Time and patience are essential for results.

(1) (1934) - A/18/43

(1) (1934) - A/18/43 II

(1) (1934) - A/18/43

(12)
Gen. 12.

GOVERNMENT OF PALESTINE

IN REPLY PLEASE QUOTE
No. 135

DISTRICT COMMISSIONER'S OFFICES
SAMARIA DISTRICT, NABLUS

28th February, 1945

Chief Secretary

Soil Conservation Board Bulletin No.1 -
Nablus-Tulkarm Valley

Your A/19/31/11/44 of 19th July, 1944.

I regret that I have been so long in replying to your letter.

2. I understand that the Soil Conservation Board selected the Nablus-Tulkarm catchment area as one suitable for trial practice of the technique of reconnaissance survey, with special reference to soil erosion conditions. It was an area of convenient size for their purpose, was easily accessible and was typical in physical feature of large tracts of Palestine. The conditions which they found and which they have described in their interesting bulletin are common to the greater part of the hill areas of the country. They are by no means peculiar to the particular valley selected by the Board and remedies of general application are as suitable here as they are elsewhere. fol. (178a) ~ A/8/43

3. As to what the best remedies are is a problem which is continuously under consideration by the Board, by the District Commissioners and by yourself. The latest recommendations of the Board and of the District Commissioners as to practical steps possible at the present time are summarised in Mr. Sale's letter F/51/15 of 24th July, 1944 regarding terracing; (this has been commented on by you in your A/8/43 Vol II of 12th October, 1944); and in my letter 1307 of 20-7-44 to the District Commissioner, Galilee, with a copy to the Administrative Secretary, regarding the control of grazing. (Paragraph 2 (c) of the minutes of the District Commissioners' Conference on 28-7-44, also refers). (186) ~ A/8/43 ~ A/31/4/44 file with AG since 1/2

4. There are many other areas in this District where the conditions of soil erosion are as bad as, or even worse than, in the Nablus-Tulkarm valley; and in some of these areas the economic importance of energetic measures for the preservation of the soil and the correlated problem of safeguarding and developing the water supplies is possibly of greater urgency than in this valley. I refer especially to the Wadi Fari'a where some LP.50,000 is now being spent on an irrigation system designed to conserve and increase the water supply by the short term method of preventing waste; the logical counterpart of this partial development would be a long term programme of afforestation of the catchment area and other soil erosion measures undertaken with a view to the further increase of the water supplies and increased fertility of the soil. But, as is pointed out in the Bulletin, soil erosion has gone so far in Palestine that the whole problem assumes gigantic proportions and, with the limited staff and funds likely to be available in the near future, it will be necessary to concentrate efforts on one particular area rather than to dissipate them over a wider field. Something demonstrative might then be achieved and there is great value in demonstration. If, therefore, you agree that efforts should be centred on a special area it remains to select that area.

5. Now, whereas the Nablus-Tulkarm Valley may not be the most important area from an economic point of view(and that is arguable), it has the great advantage of accessibility and, being traversed by two main roads and having a town at each end, its value as a demonstration would be high. Moreover, the reconnaissance survey of the Soil Conservation Board provides data which will be of use in the practical application of soil erosion measures and will, in the

GOVERNMENT OF PALESTINE.

(15)

IN REPLY PLEASE QUOTE
No. LS/8(37)

DEPT. OF LAND SETTLEMENT.
JERUSALEM.
P. O. B. 189 — TEL. 4497.

JERUSALEM 15th March, 1945.

Chief Secretary.

Subject:- Nablus-Tulkarm Valley.

(14) Reference: Your A/31/11/41 dated 14th March, 1945.

(12) Under your above quoted reference you forwarded a copy of the District Commissioner Samaria District letter No.135 dated 28th February 1945 for observations presumably on the question of the application of the Land (Settlement of Title) Ordinance to this area, as suggested by him in paragraphs 8 and 10.

I know it is often desirable to apply the Ordinance to particular areas for one reason or another and this has been done from time to time but was severely criticized in view of the cost.

In the last few years, therefore, every effort has been made to concentrate land settlement work for administrative convenience and to economize in the cost.

In view of the early completion of operations in Gaza District and certain areas in the north, subject to outstanding cases, two parties are being transferred to Jerusalem District in order to concentrate on and complete, as soon as possible, the settlement of lands around Jerusalem which present particular problems in connection with the collection of taxes, development and housing schemes and the reconstruction of the Land Registry records which were recently destroyed.

As regards the particular question of the Nablus-Tulkarm Valley, I agree it would be a good thing, if the work envisaged in the District Commissioner's letter is going to be carried out there, for the Land (Settlement of Title) Ordinance to be applied but I do not consider that this can be regarded as urgent when compared with the areas at present under settlement or to which it is proposed to apply the Ordinance.

Furthermore, I can hold out no hope of being able to take up the area until additional settlement officers have been obtained and trained.

DIRECTOR.

Copy to LS/7.
LS/8.

P.

(17)

GOVERNMENT OF PALESTINE

TELEPHONE No. 4421.
P. O. Box 1167.

IN REPLY PLEASE QUOTE
No. F/ 28/5

DEPARTMENT OF FORESTS.
JERUSALEM.

26th April, 1945.

Subject:- Nablus-Tulkarm Valley Bulletin.
Reference:- Your A/31/11/41 of 14.3.45.

CHIEF SECRETARY.

(14)

In view of the fact that the District Commissioner, Samaria, was asked to report on a Soil Conservation Board Bulletin, I assumed that you required the comments of the Soil Conservation Board on Mr. MacGillivray's report. The subject was discussed at the last Meeting of the Board, and the report was circulated for further consideration in June.

2. My personal view is that Mr. MacGillivray has produced a most valuable and practical report and has done good service in linking policy with practical problems. The aim of the Bulletin was to study the Valley in such detail that conservation measures could be applied with greater assurance and accuracy. Mr. MacGillivray has shown how the first steps can be taken even in present unfavourable circumstances. I agree with his general conclusions, and I further approve of his paras 8-10, with which my Department is particularly concerned. I am prepared to collaborate as far as possible with the operations suggested in his para 8, and I feel that afforestation schemes on State Domain may have to be supplemented by conservation measures on other lands to be controlled under the Flooding and Soil Erosion (Prevention) Ordinance.

3. In view of the fact that no senior agricultural or forestry officer is likely to be available in the near future to work as a resident manager for the scheme, I consider it advisable that a start should be made on a small scale in order that the personnel involved should gain experience before operations become too extensive. This makes an immediate start all the more necessary.

4. I shall of course remain in touch with District Commissioner, Samaria, and continue to discuss this interesting matter with him at every opportunity.

CONSERVATOR OF FORESTS

Copy to District Commissioner, Samaria,
ref. his 135 of 28th February, 1945.

(18)

A/31/11/41

11 May 1945

Director of Agriculture and
Fisheries.

I am directed to refer to
(14) my no.A/31/11/41 of the 14th March
1945 transmitting for your observations
a copy of the Soil Conservation Board
Bulletin No.1 - Nablus-Tulkarm Valley,
and to enquire whether I may soon
expect to receive a reply.

sgd R.S. Husseini
ACTING CHIEF SECRETARY.

Opens C. D.

Drafted by Mr. Bitar
Approved by Mr. Husseini
7.5.
Typed by TH
on 8.5.

Dr. Ritter F. Hunsaeldt
III
V.C. O.B.

(22)

CHIEF SECRETARY'S OFFICE
(Chief Clerk)
13 SEP. 1945
JERUSALEM

GOVERNMENT OF PALESTINE

TELEPHONE No. 4421 JERUSALEM
P. O. B. 667

IN REPLY PLEASE QUOTE
No. AG/12/124/3

DEPARTMENT OF AGRICULTURE & FISHERIES,
JERUSALEM, PALESTINE.

12th September, 1945.

CHIEF SECRETARY.

I have to refer to your Reminder No. A/31/11/41 dated the 13th August regarding Bulletin No. 1 of the Soil Conservation Board on the Nablus-Tulkarm Valley and comments thereon by the District Commissioner, Samaria District.

(28)

2. In view of discussions with Mr. Scott and Mr. MacGillivray on the 11th August 1945, I consider that further comments by me on this subject are no longer necessary.

A. [illegible]

A/DIRECTOR OF AGRICULTURE
AND FISHERIES

GOVERNMENT OF PALESTINE

SOIL CONSERVATION BOARD

BULLETIN No. 1

NABLUS-TULKARM VALLEY

S. H. SHAW, Government Geologist

and

N. A. PHARAON, Assistant Conservator of Forests.

(Issued by the SOIL CONSERVATION BOARD)

BULLETIN No. 1

NABLUS-TULKARM CATCHMENT AREA.

Introduction.

The Soil Conservation Board, which holds monthly meetings, was constituted in January, 1940, with the following terms of reference:-

> **The consideration of all problems arising from soil erosion and the resultant floods silting, and other damage; and**
>
> **The submission of recommendations for remedial and preventive measures, including legislation, publicity, and education.**

2. While the many aspects of soil conservation have been recognised and discussed, the primary consideration is that remedial and preventive action shall spring from the discussion and examination of soil conservation problems at the meetings. Before any action can be taken, even in the simplest cases, it is necessary to have quantitative details regarding the problem in hand so that proper estimates may be made of the personnel required and of the time and labour necessary to effect the desired improvement in the given case. It is also important that the public should be as widely educated as possible regarding the desirability of soil conservation measures, and still further, that no opportunity should be lost for bringing out the fact that the problem is one of serious dimensions.

3. The Board recognised at an early stage that there were many cases where it was possible to say that a serious soil erosion problem existed in a given area, but that no detailed quantitative information was available either to enable estimates to be made of the scale of the action required, or to bring home to all concerned the quantitative extent of the damage and potential damage to the country arising from neglect of proper soil conservation measures. It was, therefore, decided that investigations should be undertaken in certain important catchment areas with the object of collecting quantitative data that could be used as a basis for the initiation of remedial action. The information so gathered has been collected in the form of tables which, to a large extent, are self-explanatory and from which an investigator, interested in a particular problem, should be able to extract the information of particular interest to himself.

4. It is the hope of the Board to publish statistical details of various important catchment areas in Palestine in the form of bulletins with or without descriptive notes. The first area for which this information is available is the Nablus-Tulkarm catchment area. In this case it has been thought desirable to include, with the statistical tables, some general notes which indicate both the way in which the data may be employed in estimating the extent of work required to remedy the serious situation, and that the existing state of affairs is but a stage in the increasingly destructive series of events brought about by neglect of proper measures of soil conservation.

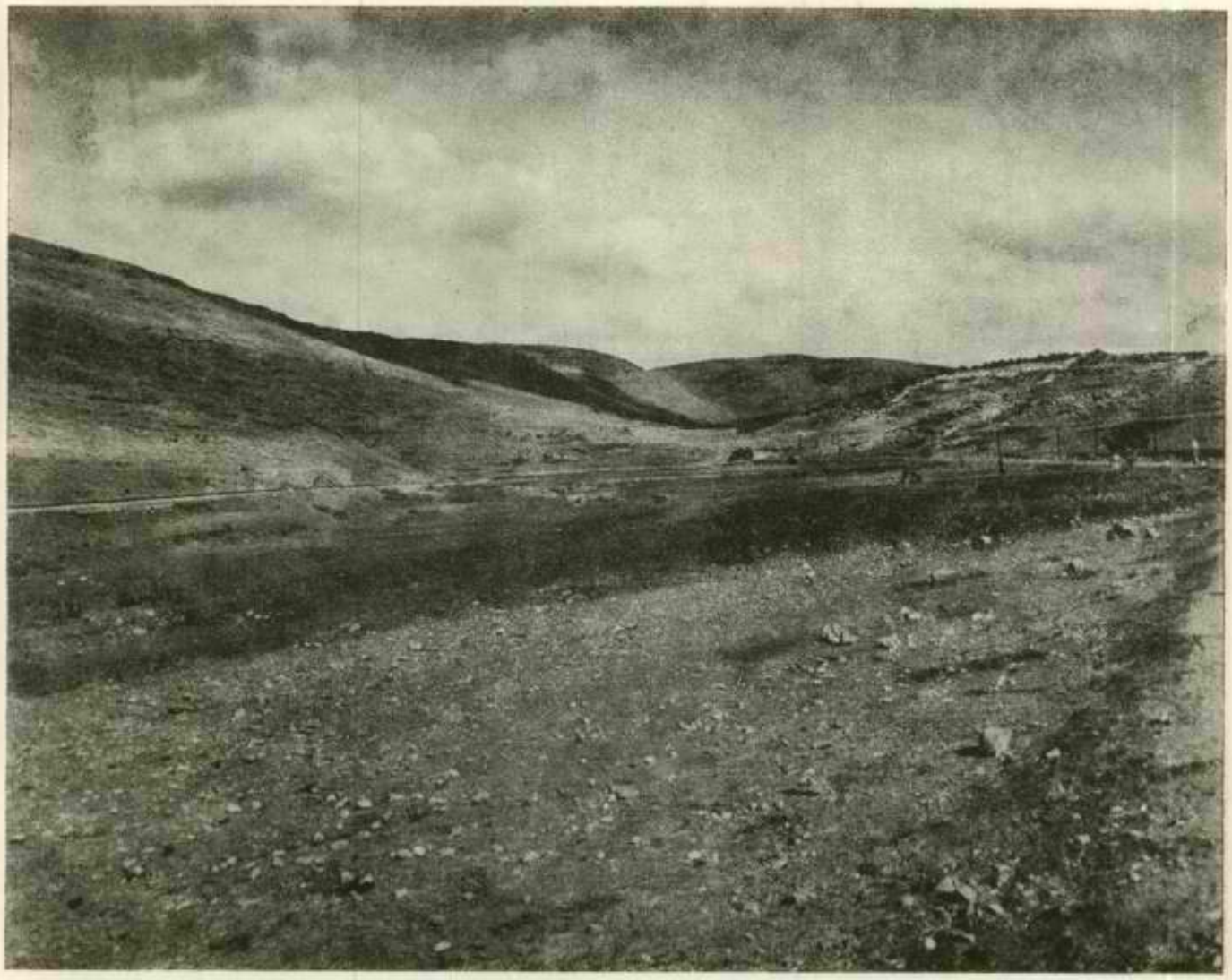
5. This bulletin gives the statistical data in the form of appendices to a report by Mr. Pharaon, Assistant Conservator of Forests, who carried out the survey of the catchment area in 1941.

6. Grateful acknowledgment is made of the cooperation of the Department of Statistics in producing the tables from the data collected by Mr. Pharaon.

General.

The area surveyed is shown on the map accompanying this report, from which it will be seen that the direction of the main drainage is from east to west.

There are two towns and 25 villages in this area, one town and 17 villages of which are in the Nablus Sub-District, and one town and 8 villages in the Tulkarm Sub-District. Nine villages have their entire lands within the catchment area and the rest are on the boundary.



General view of eroded hills and flood-swept river valley (No. 1 on map)

The principal towns are Nablus and Tulkarm. The former has a population of 22,000 and is a marketing town for the whole district and the centre of a soap industry that at one time had a greater importance than it has now. There are twenty-one soap factories at present working and these use the olive oil produced in the district. It is said that the oil production is less now than it was 30 or 40 years ago and this has been attributed to the cutting of olive trees by the Turks for use as fuel for locomotives. The effects of soil erosion are locally admitted to be more noticeable now than formerly and one reason advanced for this is that the population is greater as there has been no army recruitment since the end of the Turkish regime and, as a result, more land has been cultivated and has had its natural vegetation removed. Whatever may have been the state of the town in the past, it is certain that soil conservation measures would improve its present condition.

Tulkarm, with a population of 7,000 is a town of much later birth than Nablus and, situated at the edge of the hills, is a well known cattle and livestock trading centre where markets are held almost every day of the week.

The catchment area is 143 square kilometres in total extent, excluding the built-up areas, of which 96 square kilometres fall in the Nablus Sub-District and 47 square kilometres in the Tulkarm Sub-District. The built-up areas are about 3.3 square kilometres and 0.3 square kilometres respectively.

This drainage basin is formed by two important wadis, the first and most important is that running from Nablus to Tulkarm. This wadi assumes different names along its course, near Nablus it is known as Wadi Et-Tuffah, further down and near Deir Sharaf village it is known as Wadi esh-Sha'ir, and still further down by Anabta and Tulkarm as Wad ez-Zeimar — the "Whistling Torrent". The second important wadi is in fact a tributary of the one mentioned above, and drains the water falling on some six to seven villages lying in the north of this catchment area. The wadi is known as Wad Qatis and joins the main Nablus-Tulkarm wadi by the railway crossing near Ramin village.

The eastern part of this catchment area is broader than the western part and the steepness of the slopes is greater in the former than in the latter.

The western boundary of the area was arbitrarily chosen as the Tulkarm-Haifa Railway line since, to the west of that line, the plains proper begin.

Geological Notes

The geological formation encountered in the catchment area are of Eocene and Upper Cretaceous age. The former is divided into an upper series of chalky rocks and a lower of hard limestones, while the latter consists of chalky rocks of the Senonian series underlain by hard limestones of the Turonian series. The dip of these rocks is in general towards the west at low angles. The eastern part of the catchment area is mainly occupied by the Eocene formations while the Turonian rocks are in the valley bottom along the Nablus-Tulkarm Road from Deir Sharaf onwards.

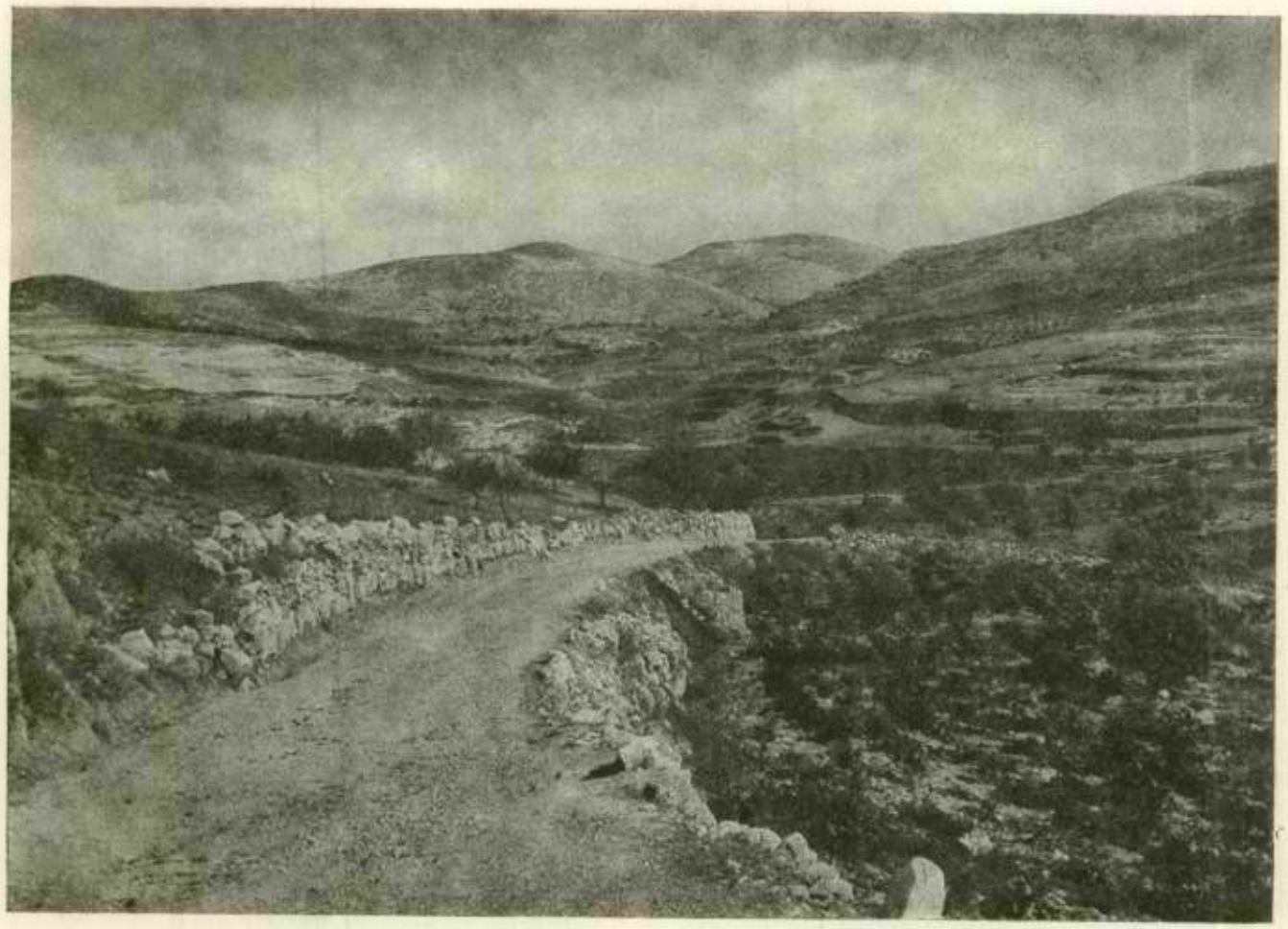
A well-marked difference can be observed between the soil derived from the chalky rocks and those formed from the hard limestones. The former give rise to grey or white soils with relatively few boulders and stones while the latter are usually covered by dark red or reddish brown soil with plentiful stones and boulders of hard limestones. The chalky hills are readily distinguished from those formed of harder rock by having more rounded contours with little sign of rock outcrop; the hard limestones are usually well-bedded and form rocky hills of a naturally terraced appearance.

The names of the villages in Appendix III are followed by an indication of the geological formation on which each stands. It should be remembered, however, that the actual village lands may not be situated exclusively on the geological formations so indicated.

Historical Notes.

The following comments on a quantitative study of soil conditions in the Nablus-Tulkarm catchment area are preceded by three short reports. Two of them are descriptions of the area written about a hundred years ago; the third is a report by the Senior Medical Officer written in 1940.

That there have been changes, and changes for the worse, in the condition of the valley, no one can deny and little comment is needed on the contrast presented by these reports. It is hoped that the quantitative study which follows will furnish additional proof of the magnitude of the problem and that, more important, it will pave the way for the taking of active measures for the prevention of further damage.



Eastern section of watershed: High eroded hills and neglected bench terraces (No. 2 on map)

Neglected bench terraces near Sebastya (No. 3 on map)

"June 15th, 1838.

" *The whole valley of Nablus is full of fountains, irrigating it most abundantly; and for the very reason not flowing off in any large stream. The valley is rich, fertile and beautifully green as might be expected from this bountiful supply of water. The sides of the valley too, the continuation of Gerizim and Ebal, are studded with villages, some of them large; and these again are surrounded with extensive tilled fields and olive groves, so that the whole valley presents a more beautiful and inviting landscape of green hills and dales than perhaps any other part of Palestine. It is the deep verdure arising from the abundance of water which gives it this peculiar charm . . . .*

. . . . The hill of Samaria (Sebaste) is cultivated to the top; and about midway of the ascent is surrounded by a narrow terrace of level land, like a belt, below which the roots of the hill spread off more gradually into the valley. Higher up too are the marks of slighter terraces, once occupied perhaps by the streets of the ancient city . . . .

"April 22nd, 1852.

" *. . . . Setting off from Anebta, we proceeded up the fine valley (Wadi Sha'ir) amid its rural scenery . . . The little stream was following along the bottom. There were also two more mills, not running; and the people in summer, it was said, had always to go to Nablus to get their grain ground . . . .*

"April 23rd, 1882.

" *. . . . We now entered the southern basin and . . . struck again the little brook of yesterday, here running with a fuller stream . . . Dibbarieh. In the valley below was a mill; and these now became frequent along the brook all the way to Nablus. Some of the mills are large and to most of them the water is brought in at the top, in long races resting on arches . . Deir Sharaf . . A brook soon came in from a broad side valley to the left.*

(Extracts from report by Robinson — Bibl. Res. in Palestine, Vol. III, pp. 136 & seq., & later Bibl. Res. in Palestine, pp. 126 & seq. 1856).

"1839 Midsummer.

" *From Samaria to Nablus is two hours' easy riding, first south, over the shoulder of the mountain, and then eastward, up the lovely vale of Nablus. Nothing in Palestine surpasses it in fertility and natural beauty, and this is mainly due to the fine mill-stream which flows through it. The whole country is thickly studded with villages, the plains clothed with grass or grain, and the rounded hills with orchards of olive, figs, pomegranate, and other trees.*

(Extracted from report by W. M. Thompson — The Land and the Book, p. 470).

"Floods in Nablus.

" *Every year a good deal of damage is caused by flooding in the Wadi Tuffah, i.e. the wadi immediately below the town, and in spite of the terracing of the gardens there, in the main wadi further down the Tulkarm road.*

A desolate valley : cause and effect (No. 4 on map)

An eroded slope with new terraces at its **foot** (No. 5 on map)

An abandoned water-mill (No. 6 on map)

In the winter of 1934-35, flooding occurred in the town causing considerable damage. In the lower part of the town the water was over a metre deep and on the slopes there were torrents down the streets. The streets were torn up, houses and furniture were damaged, as well as the contents of shops and three people were drowned. The body of one of these was carried down to Tulkarm a distance of 30 kilometres.

Further down the wadi, many gardens were destroyed near the town, a newly-planted apricot orchard was washed away, the railway and road destroyed completely over a considerable distance and many olive trees uprooted and washed away.

Near Ramin the flood was held up by the railway bridge and finally flowed over the top of the bridge until it broke through the embankment beside it. It was the release of this pent-up water which washed away many olive trees lower down.

(Report on floods in Nablus in 1934-35 by Dr. W. K. Bigger O.B.E., M.C., Senior Medical Officer).

Method of Study.

The 1:10,000 village maps were used as the basis of the survey and were found to be very convenient since, besides eliminating the necessity for surveying, they show in detail boundaries and areas of the village lands.

Each village was visited by the Reconnaissance Officer. Statistics of village population and live-stock were obtained and the principal sources of livelihood of the villagers recorded (Appendix I). After that, followed a personal visit to the village lands in which the following points were noted: aspect, slope, rock bedding, rock outcrop, rock boulders, terraces, soil, type of cultivation and its extent, and estimated erosion. These points were described in comparative terms (see Appendix II) and were recorded in field books. To enable this to be done each village area was divided into numbered sections, each section being allotted an appropriate item number. The results of this field Survey are summarised in Appendix III.

It should be noted that visual estimates were made of the particular category into which any parcel of land might fall in regard to the above points, and that a personal element is therefore introduced into the quantitative results. In general, however, the individual units making up a village area were small so that the possibility of gross errors in the final result is small.

Notes on Appendix IV.

This Appendix has been compiled from the data in Appendix III and consists of comparative tables illustrating the principal features of the total area. Eight main tables are given but others away be compiled if necessary. It would for instance be possible to compare terracing and type of cultivation should such a comparson be required. The tables shown however are those that are most likely to thow light on the problem of erosion in the area.

It is important to mention that the town, and village, built-up areas have been excluded from this study as they cannot be properly represented in the descriptive scheme used in the survey. The built-up area in the Nablus Sub-District is 3,287 dunums and includes the irrigated garden areas which are a noticeable feature of the wadi immediately west of the town. In the Tulkarm Sub-District the built-up area occupies 255 dunums.

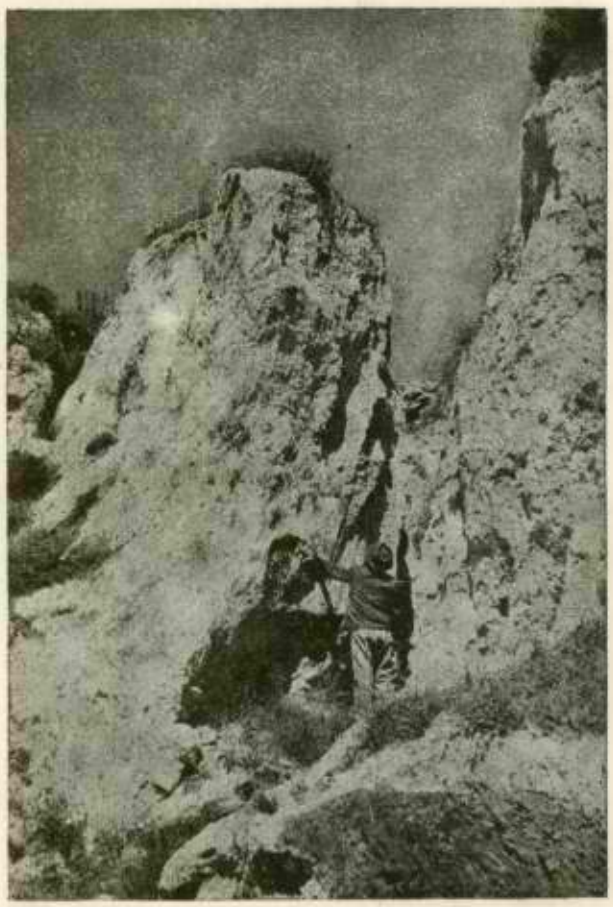
The study of Appendix IV throws light on many salient features, and the table contains sufficient data to enable almost any aspect of the problems, connected with soil conservation and utilisation, to be expressed in a quantitative fashion. The following notes draw attention to some of the more important facts obtained from the survey.

Slope.

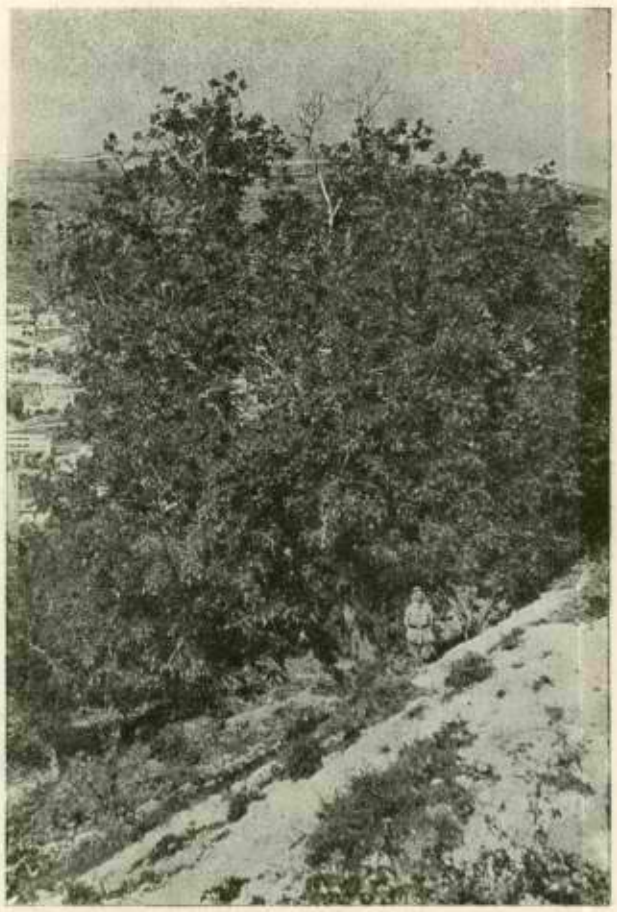
There are 37,146 dunums of steep slopes and 102,052 dunums of precipitous slopes in the entire catchment area of 143,221 dunums. This constitutes over 97 per cent. of the entire area. It is an agreed agricultural principle that such lands should be very carefully managed as regards terracing and mode of cultivation. Only 8,428 dunums or about 8°/₀ of the precipitous slopes, and 5,107 dunums or about 14°/₀ of the steep slopes have any terracing which might be really effective in preventing soil wash-off. Yet no less than 20,455 dunums of steep slope and 47,023 dunums of precipitous slope (55 per cent. and 46 per cent. of the steep and precipitous slopes respectively) represent areas of neglected terraces. In addition it will be noticed that 28,398 dunums and 45,664 dunums are over 60 per cent. cultivated on the steep and precipitous slopes respectively — a ratio of well over 76 per cent. for the former and 44 per cent. for the latter. Looking at it from another aspect, we find that 22,865 dunums or 62 per cent. on the steep slopes and 80,420 dunums or 80 per cent. on the precipitous slopes are primarily growing ground crops, thereby requiring ploughing. It is quite evident that these practically unterraced slopes are losing a considerable amount of surface soil annually and need urgent remedial measures.

16,191 dunums or 44 per cent. on the steep slopes and 95,193 dunums or about 93 per cent. on the precipitous slopes are estimated to show erosion. This fact, added to that mentioned above, shows that about 50 per cent. of the steep slopes and practically all the precipitous slopes are eroded annually, losing in the aggregate a considerable tonnage of soil, which finds its way on to public highways or road drains, is deposited on and probably damages fertile plains or is lost altogether into the sea. Confirmation of this process of loss is provided by table 8 of Appendix IV, which shows that over 41 per cent. of the steep slope and 70 per cent. of the precipitous slopes show abundant or very abundant rock outcrop respectively.

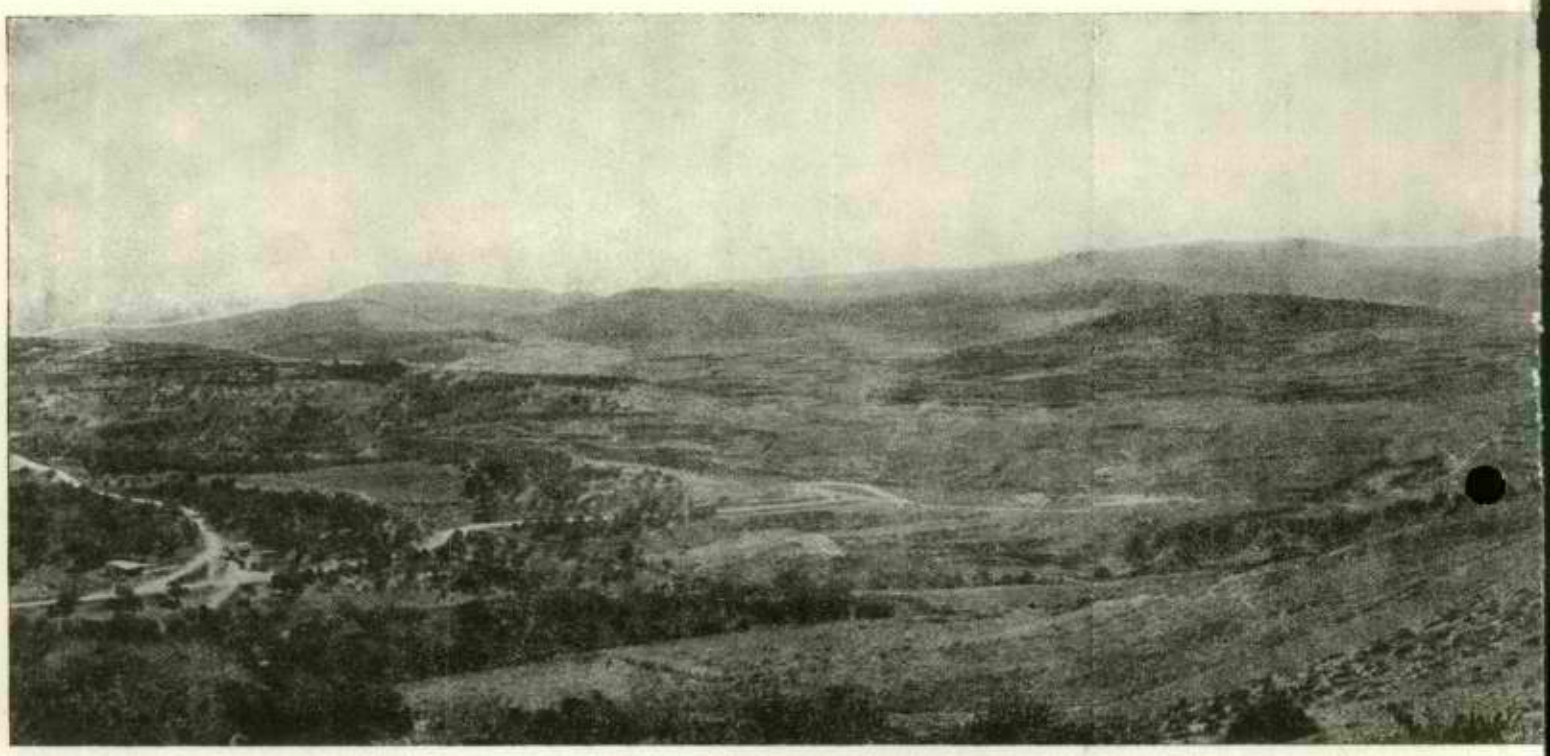
Only one-third of the area on the steep slopes (and one half of that on the precipitous slopes) devoted to fruit trees and vineyards, is terraced. This is evidence of faulty practice as all such areas should be terraced if productive fruit farming is to be achieved.



Newly-exposed roadside cutting: Erosion damage of one season
(No. 7 on map)



Walnut tree near Nablus town



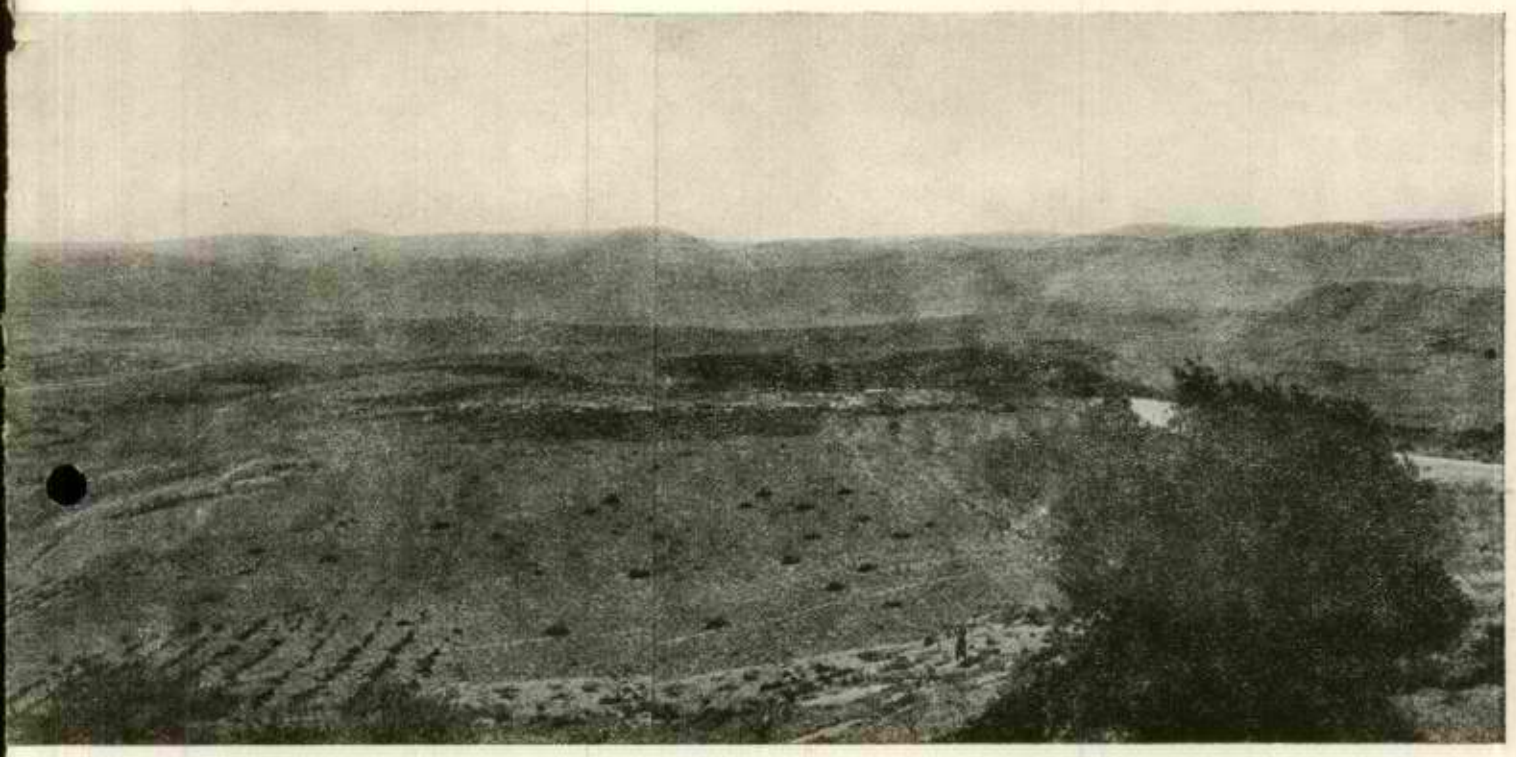
PANORAMIC VIEW SC

The fact that the slopes of this catchment area face mainly north or south is shown by the fact that there are 55,032 dunums whose aspect is north and 57,069 dunums whose aspect is south, i.e. an area equal to about 80 per cent. of the entire basin.

Table 7 shows the extent of cultivation as compared with rock outcrop. Except for slight variation, the tendency is that the extent of cultivation increases as the rock outcrop decreases.

Examination of Table 9 shows that about 30°/₀ of the soil of this area is classified as inadequate, while 70°/₀ is sufficiently deep.

Table 10 shows the occurrence of rock boulders over the entire area. It is important to bear in mind the abundance of boulders, as these are the essential materials for use when building stone terraces. Parallel with the study of boulders must be added the occurrence of rock outcrop, which also yields abundant materials for terracing. Table 7 shows that 87,155 dunums or 60°/₀ of the entire catchment area have abundant rock outcrop.



UTH FROM BURQA

Summary.

The foregoing brief description of the Catchment Area of the stream which runs to the north of Tulkarm is, in fact, merely an introduction or explanation. After a short historical note, reference is made to the condition of the valley in 1941. If remedial action can be taken, much of the description of existing conditions will soon be out-of-date, and will have the same historical interest as present records of a century ago. A great deal of detailed information lies in the columns of Appendix III. Students of the scientific, economic and social problems of Palestine can obtain a clear and detailed picture of this small, interesting area.

It is the hope of the Soil Conservation Board that similar Bulletins can be prepared in respect of other catchment areas, until much or all of the country is so described. The purpose of the Board is even more far-reaching, and will be realised only when these Bulletins are used as the basis of a series of regeneration operations, which will change the appearance of the country and, above all, the economic and social conditions of rural life.

APPENDIX I.

Village Record and Statistics as in Summer, 1941.

A. Nablus Sub-District.

1. Asria Ash-Shamaliya. Population 2300, 6 hamoulis,* one mukhtar.† The villagers own 1300 sheep and goats, 1500 cattle and 180 other work animals. Agriculture in the main source of livelihood for the villagers. There are two oil presses in this village. The villagers have effected land purchases from neighbouring villages.

2. Bazzariya. Population 170, 2 hamoulis and one mukhtar. The villagers own 300 sheep and goats, 120 cattle and 50 other work animals. Agriculture is the main source of livelihood for the villagers. The villagers own no land beyond the village boundary. Eight men earn their living outside the village, mainly Public Works Department work.

3. Beit Iba. Population 650, 4 hamoulis and one mukhtar. The villagers own 100 sheep and goats, 100 cattle and 90 other work animals. Agriculture is the main source of livelihood for the villagers. About 60 men earn their living beyond the village mainly as manual labour in Public Works Department and some in the Police service. The villagers own no land beyond the village boundary.

4. Beit Umrin. Population 850, 4 hamoulis and one mukhtar. The villagers own 600 sheep and goats, 200 cattle and 125 other work animals. Agriculture is the main source of livelihood for the population. The villagers have effected land purchases from adjoining villages. About 35 men earn their living beyond the village, mainly as manual labourers.

5. Beit Wazan. Population 320, 2 hamoulis and one mukhtar. The villagers own 300 sheep and goats, 60 cattle and 20 other work animals. Agriculture is the main source of livelihood for the villagers. The villagers own no land beyond the village boundary.

6. Burqa. Population 3000, 5 hamoulis and one mukhtar. The villagers own 1000 sheep and goats, 200 cattle and 150 other work animals. Agriculture is the main source of livelihood for the villagers, and some 400 to 500 men earn their living away from the village, mainly in Government public services. There are two oil presses and one flour mill in the village. The villagers have effected extensive land purchases from the adjoining villages.

7. Deir Sharaf. Population 850, 4 hamoulis and one mukhtar. The villagers own 500 sheep and goats, 150 cattle and 100 other work animals. Agriculture is the main source of livelihood for the villagers. There are about 40 to 50 men earning their living away from the village, mainly in Government public services. The villagers own no land beyond their village boundary.

8. Ijnisinya. Population 210, 4 hamoulis and one mukhtar. The villagers own 300 sheep and goats, 100 cattle and 25 other work animals. Agriculture is the main source of livelihood for the villagers. There are about 20 men who earn their living away from the village, mainly in Railways and Public Works Department. About three-fourths of this village lands belong to Burqa and Sabastya villages.

9. Juneid. Population 130, one hamouli and one mukhtar. The villagers own 100 sheep and goats, 30 cattle and 7 other work animals. Agriculture is the main source of livelihood for the villagers. The villagers own very little land beyond their village boundary but they share-plough the lands of a wealthy land owner that adjoin their village.

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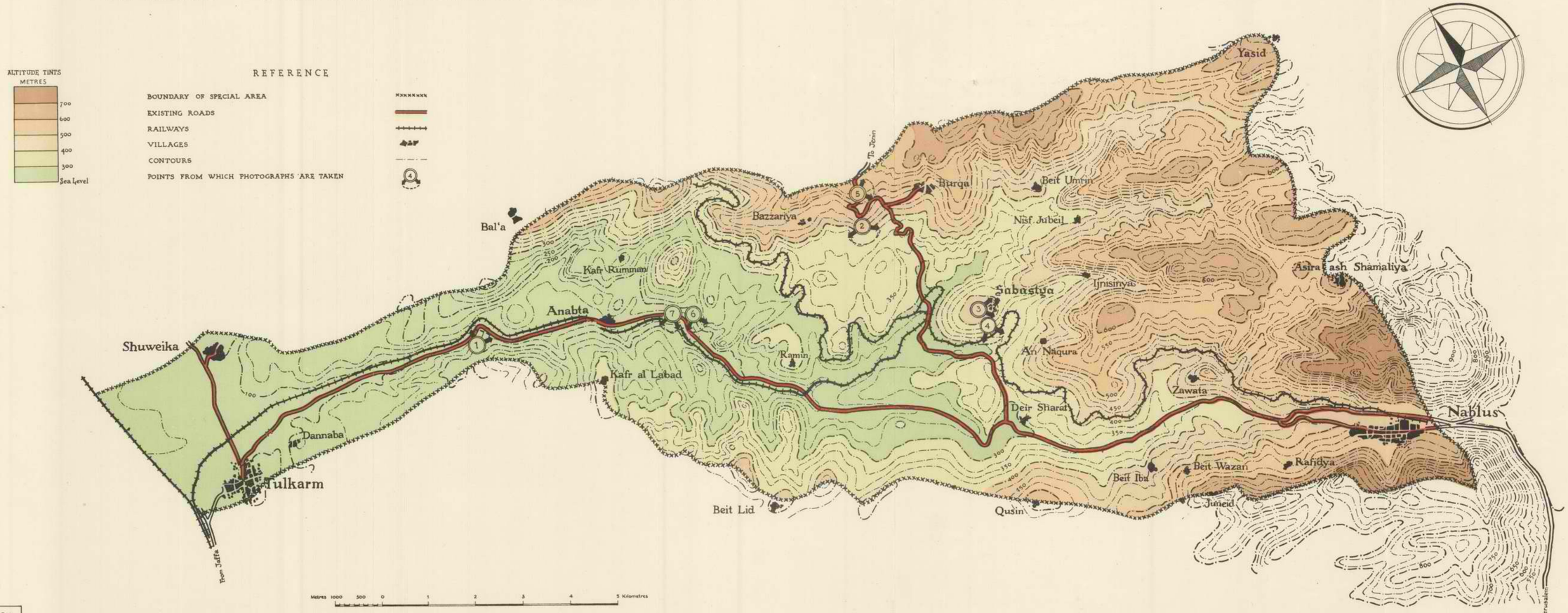
* Hamouli = clean or family.

† Mukhtar = village headman.

NABLUS - TULKARM CATCHMENT AREA



10. **Nablus.** For records of this town, please refer to the main body of this report.

11. **An Naqura.** Population 500, 4 hamoulis and one mukhtar. The villagers own 400 sheep and goats, 120 cattle and 20 other work animals. Agriculture is the main source of livelihood for the villagers. There are about 50 men who earn their living outside the village, mainly in Railways and Public Works Department. The villagers own no lands beyond their village boundary.

12 **Nisf Jubeil.** Population 150, 2 hamoulis and one mukhtar. One half of population are Christians and the other half Moslems. The villagers own 200 sheep and goats, 50 cattle and 10 other work animals. Agriculture is the main source of livelihood for the villagers. There are about 10 men who earn their living beyond the village. The villagers own no land outside their village boundary.

13. **Qusin.** Population 300, 3 hamoulis and one mukhtar. The villagers own 185 sheep and goats, 100 cattle and 25 other work animals. Agriculture is the main source of livelihood for the villagers. There are no men earning their living beyond the village and the village seems in a poor condition. There are some small land purchases beyond the village boundary.

14. **Rafidya.** Population 500, 5 hamoulis (3 Christians and 2 Moslems) and one mukhtar. The villagers own 400 sheep and goats, 150 cattle, mainly milch animals, and 30 other work animals. Agriculture is the main source of livelihood for the villagers — fruit trees and dairy products. There are about 200 men earning their living outside the village, most of whom seem to have no connections with the village. The villagers own small tract of land in the Jordan Valley — about 300 dunums.

15. **Sabastya.** Population 100, 4 hamoulis and one mukhtar. The villagers own 350 sheep and goats, 40 cattle and 50 other work animals. Agriculture is the main source of livelihood for the villagers. Some 25 to 30 men earn their living from occupations outside the village, mainly in Public Works Department. The villagers have purchased about 50 dunums of land from the adjoining villages.

16. **Zawata.** Population 350, 7 hamoulis and one mukhtar. The villagers own 250 sheep and goats, 120 cattle and 50 other work animals. Agriculture is the main source of livelihood for the villagers. About 10 to 15 men earn their living outside the village, mainly in Public Works Department. The villagers own no land beyond the village boundary.

B. Tulkarm Sub-District.

1. **Anabta.** Population 3000, 2 hamoulis. There is a local Council composed of a president and 9 members. The villagers own 500 sheep and goats, 60 cattle and 125 other work animals. Agriculture is the main source of livelihood for the villagers. A good number (about 400) of Anabta sons earn their living away from the town, mainly in the Department of Education, Telephone and Telegraph, Police, Railways, Public Works and private groves — earning some LP. 6,000 annually. The villagers have bought extensive tracts of land in the plains west of Tulkarm.

2. **Bala'a.** Population 2300, 7 hamoulis and 2 mukhtars. The villagers own 150 sheep and goats, 200 cattle and 130 other work animals, Agriculture is the main source of livelihood for the villagers — fruit trees and olive groves. There are about 100 men who earn their living in private undertakings outside the village. The villagers own no lands beyond the village boundary.

3. **Beit Lid.** Population 1000, 2 hamoulis and one mukhtar. The villagers own 500 sheep and goats, 1000 cattle and 200 other work animals. Agriculture is the main source of livelihood for the villagers. There is very earning little from occupations beyond the village. The villagers own Kh. Beit Lid (about 5000 dunums) and about 400 people live there permanently.

4. Dannaba. Population 900, 3 hamoulis and one mukhtar. The villagers own 800 sheep and goats, 140 cattle, mostly milch animals, and 60 other work animals. Agriculture is the main source of livelihood for the villagers. About 40 men earn their living beyond the village, mainly occupied in business, and cart ownership in Jaffa. The villagers own 12,000 dunums of lands in the plains.

5. Kafr al-Labad. Population 900, 3 hamoulis and one mukhtar. The villagers own 600 sheep and goats, 150 cattle and 100 other work animals. Agriculture is the main source of livelihood for the villagers — mostly olive and fruit tree growing. About 60 men earn their living away from the village mainly as manual labourers. The villagers own no land beyond the village boundary.

6. Kafr Rumman. Popular 450, 4 hamoulis and one mukhtar. The villagers own 300 sheep and goats, 160 cattle and 25 other work animals. Agriculture is the main source of livelihood. About 30 men earn their living beyond the village mainly in Railways and Posts and Telegraphs. The villagers own a small amount of land (about 300 dunums) in the plains to the west.

7. Ramin. Population 768, 4 hamoulis and one mukhtar. The villagers own 800 sheep and goats, 450 cattle and 100 other work animals. Agriculture is the main source of livelihood for the villagers. About 18 men earn their living away from the village, mainly in agricultural undertakings and Railways. The villagers own no land beyond the village boundary.

8. Shuweika. Population 2800, 8 hamoulis and one mukhtar. The villagers own 1000 sheep and goats, 70 cattle, mainly milch animals, and 260 work animals. Agriculture is the main source of livelihood for the villagers. Only 12 men earn their living beyond the village. The villagers own about 11,500 dunums of land in the plains to the west.

9. Tulkarm. For records of this town, please refer to the main body of this report.

APPENDIX II.

CLASSIFICATION CODE

Item 1. **Aspect.**

1	North (from N. E. to N. W.)
2	East (from N. E. to S. E.)
3	South (from S. E. to S. W.)
4	West (from S. W. to N. W.)
5	Nil (level ground).

Item 2. **Slope.**

1 Safe	0 — 3%	i.e. 0 to 2	degrees
2 Moderate	3 — 8%	i.e. 2 to 4½	,,
3 Steep	8 — 25%	i.e. 4½ to 14	,,
4 Precipitous	Over 25%	i.e. over 14	,,

Item 3. **Rock Bedding.**

1 Horizontal
2 Inclined
3 Irregular
4 Absent (not visible owing to cover).

Item 4. **Rock Outcrop.**

1 Very abundant (more than 50 per cent. of surface).
2 Abundant
3 Sparse (less than 10 per cent. of surface).
4 Absent

Item 5. **Rock Boulders.**

1 Abundant large (too large for easy handling)
2 Abundant small (suitable for wall building)
3 Sparse (not including sparse, small)
4 Absent (including sparse, small)

Item 6. **Terracing.**

1 Recent good contour terracing.
2 Recent rough terracing.
3 Old terraces in good repair.
4 Old terraces neglected.
5 Natural terraces, neglected.
6 No terracing.
7 Terracing impossible.

Item 7. **Soil.**

1 Absent 0 — 10 cms.
2 Shallow 10 — 40
3 Adequate 40 — 150
4 Deep 1½ m. and more
5 Deep but poor.

Item 8. **Type of Cultivation or Cover.**

1 Garden area (irrigated, vegetable-growing)
2 Fruit trees
3 Vineyard
4 Ground crop with scattered fruit trees (5 to 30 %)
5 Ground crop
6 Forest trees and high bushes
7 Forest ground cover
8 Stripped of vegetation.

Item 9. **Extent of Cultivation or Cover (applicable only to types 2, 3, 4, 5, 6, and 7).**

1 0 — 30 %
2 30 — 60 %
3 60 % and over.

Item 10. **Erosion.**

1 Nil or gentle
2 Sheet erosion present
3 Gully erosion present
4 Denuded
5 Damaged by uncontrolled run-off from neighbouring plots.

Item 11. **Area in Dunums.**

APPENDIX III.

DESCRIPTION OF VILLAGE SECTIONS.

NABLUS SUB-DISTRICT.

Note :- The numbers in the columns indicate the classification in which the section is placed. (See Appendix II).

Village / Geological Formation	Nablus Lower Eocene										Beit Umrin Senonian																Ijnisinya Lower Eocene						
Section Number	1	2	3	4	5	6	7	8	9	10	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	1	2	3	4	5	6	7
1. Aspect	3	3	3	1	1	2	1	3	3	3	3	1	1	1	1	1	1	1	1	1	3	1	3	3	3	3	3	1	3	3	3	3	3
2. Slope	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3
3. Rock Bedding	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4. Rock Outcrop	1	1	–	1	2	1	1	2	1	1	3	3	3	3	3	3	2	2	2	2	3	2	3	–	2	3	2	2	2	2	1	3	–
5. Rock Boulders	2	2	–	2	2	3	3	3	2	2	3	3	3	3	3	3	2	2	2	2	3	2	3	–	2	3	2	2	2	2	2	3	–
6. Terracing	6	6	–	4	2	4	6	4	6	4	4	4	4	4	6	2	6	4	4	6	2	4	2	–	6	2	6	6	6	4	6	4	–
7. Soil	2	2	–	2	2	2	3	3	2	3	3	3	3	3	2	3	2	2	2	2	3	3	3	–	2	3	3	3	3	3	2	3	–
8. Type of Cultivation or Cover	2	2	1	4	2	4	2	2	5	2	5	5	5	5	5	2	5	5	5	5	2	2	2	4	7	2	5	4	5	5	5	2	2
9. Extent of Cultivation or Cover	2	3	–	1	3	1	3	3	1	3	3	3	3	2	3	3	3	2	2	2	3	3	3	–	3	3	2	3	3	2	1	3	–
10. Erosion	1	2	–	3	1	2	2	2	2	2	2	2	2	2	2	1	2	2	2	2	1	2	1	–	1	1	2	2	2	2	2	2	–
11. Area in dunams	506	171	2156	303	128	410	487	834	862	483	1680	724	443	813	756	41	1043	1313	450	721	451	515	215	73	303	571	1096	2661	676	454	1171	402	45
Remarks			U.A.																					V.B. U.A.									V.B. U.A.

Village / Geological Formation	Asira esh-Shamaliya Upper Eocene																	Yasid Upper Eocene		Nisf Jubeil Lower Eocene								Kafr Qallil Junction of Senonin & Lower Eocene
Section Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	1	2	1	2	3	4	5	6	7	8	1
1. Aspect	4	4	3	3	1	3	3	3	3	2	1	4	3	1	4	4	3	3	4	3	1	1	1	1	3	4	1	1
2. Slope	4	4	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	3	3	4	4	4	4	4	4	3	4	3
3. Rock Bedding	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4. Rock Outcrop	2	2	2	2	2	2	2	2	—	3	3	2	2	3	3	3	3	3	3	2	2	2	2	2	3	–	3	3
5. Rock Boulders	2	2	3	2	2	3	3	3	—	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2	3	–	3	2
6. Terracing	4	6	2	4	6	6	6	2	—	2	4	6	6	4	4	4	6	2	4	6	6	6	6	6	2	–	4	4
7. Soil	3	3	3	2	2	2	2	2	—	3	3	2	2	2	2	2	2	3	3	2	2	2	2	3	3	–	3	2
8. Type of Cultivation or Cover	5	5	2	5	5	5	5	2	2	2	2	5	5	5	5	5	5	3	5	5	5	5	5	4	2	4	2	8
9. Extent of Cultivation or Cover	3	2	3	2	2	3	2	3	—	3	3	1	1	2	2	1	2	3	3	2	2	2	2	3	3	–	3	1
10. Erosion	2	2	2	2	2	2	2	2	—	1	2	2	2	2	2	2	2	1	2	2	2	2	2	2	1	–	2	2
11. Area in dunams	2056	1613	1262	525	1378	499	244	1765	126	712	1133	158	707	775	657	536	673	52	218	1686	279	359	505	1037	1143	55	943	386
Remarks									V.B. U.A.																	V.B. U.A.		

U.A. — Urban Area.
V.B. U.A. — Village Built-up Area.

Village / Geological Formation	Sabastya Senonian									
Section Number	1	2	3	4	5	6	7	8	9	10
1. Aspect	1	3	1	2	1	3	1	4	1	1
2. Slope	4	3	4	3	3	4	3	4	3	3
3. Rock Bedding	3	3	3	3	3	3	3	3	3	3
4. Rock Outcrop	3	3	3	–	3	3	3	3	3	3
5. Rock Boulders	3	3	3	–	3	3	3	3	4	4
6. Terracing	4	4	4	–	4	4	4	4	6	6
7. Soil	5	5	5	–	5	5	5	5	4	4
8. Type of Cultivation or Cover	4	2	2	2	2	5	5	5	5	2
9. Extent of Cultivation or Cover	3	3	3	–	3	3	3	3	3	3
10. Erosion	2	1	1	–	1	2	1	2	1	2
11. Area in Dunums	830	1010	435	98	420	708	492	460	517	67
Remarks				V.B. U.A.						

Village / Geological Formation	Zawata Junction of Senonian & Lower Eocene										
Section Number	1	2	3	4	5	6	7	8	9	10	11
1. Aspect	1	3	3	1	3	3	1	4	3	3	2
2. Slope	4	4	4	4	3	4	3	3	4	4	4
3. Rock Bedding	3	3	3	3	3	3	3	3	3	3	3
4. Rock Outcrop	2	2	2	2	3	–	3	3	2	3	3
5. Rock Boulders	2	2	2	2	3	–	3	3	3	3	3
6. Terracing	6	6	6	6	4	–	4	1	4	4	4
7. Soil	2	2	2	2	3	–	3	3	3	3	3
8. Type of Cultivation or Cover	5	5	5	5	5	2	2	2	5	5	5
9. Extent of Cultivation or Cover	1	1	1	1	3	–	3	3	2	2	2
10. Erosion	2	2	2	2	1	–	1	1	2	2	2
11. Area in Dunums	356	200	252	352	412	26	137	118	292	378	582
Remarks						V.B. U.A.					

Village / Geological Formation	En Naqura Lower Eocene										
Section Number	1	2	3	4	5	6	7	8	9	10	11
1. Aspect	3	3	1	3	3	1	1	1	4	1	3
2. Slope	4	3	4	4	3	4	3	3	3	4	3
3. Rock Bedding	3	3	3	3	3	3	3	3	3	3	3
4. Rock Outcrop	2	2	2	3	3	3	3	–	3	3	3
5. Rock Boulders	3	3	3	3	3	3	3	–	3	3	3
6. Terracing	4	4	4	4	4	4	4	–	4	4	4
7. Soil	3	3	3	3	5	3	3	–	4	3	5
8. Type of Cultivation or Cover	5	5	5	5	2	5	2	2	2	5	5
9. Extent of Cultivation or Cover	2	2	3	3	3	3	3	–	3	3	3
10. Erosion	2	2	2	2	1	2	1	–	1	2	2
11. Area in Dunums	816	829	483	1220	124	445	588	20	156	470	370
Remarks								V.B. U.A.			

Village / Geological Formation	Bazzariya Junction of Senonian & Lower Eocene									
Section Number	1	2	3	4	5	6	7	8	9	10
1. Aspect	3	3	3	3	4	3	1	3	3	4
2. Slope	3	4	3	3	3	4	4	4	3	4
3. Rock Bedding	3	3	3	3	3	3	3	3	3	3
4. Rock Outcrop	3	2	–	3	3	3	3	3	3	2
5. Rock Boulders	3	3	–	3	3	3	3	3	3	3
6. Terracing	3	4	–	4	4	4	4	4	4	6
7. Soil	5	5	–	5	5	5	3	3	5	3
8. Type of Cultivation or Cover	2	5	4	2	5	5	5	4	2	4
9. Extent of Cultivation or Cover	3	2	–	3	3	3	1	2	3	2
10. Erosion	1	2	–	1	2	2	2	2	1	2
11. Area in Dunums	270	168	62	240	717	464	661	498	45	1123
Remarks			V.B. U.A.							

Village / Geological Formation	Qusin Senonian						
Section Number	1	2	3	4	5	6	7
1. Aspect	4	2	1	1	4	1	2
2. Slope	1	4	4	3	4	4	4
3. Rock Bedding	4	3	3	3	3	3	3
4. Rock Outcrop	4	2	2	—	3	2	2
5. Rock Boulders	3	3	3	—	3	3	2
6. Terracing	6	4	4	—	4	4	6
7. Soil	4	5	5	—	4	5	2
8. Type of Cultivation or Cover	4	5	5	2	5	5	5
9. Extent of Cultivation or Cover	3	3	3	—	3	2	2
10. Erosion	1	1	1	—	1	1	2
11. Area in Dunums	48	712	457	62	347	448	654
Remarks				V.B. U.A.			

Village / Geological Formation	Deir Sharaf Junction of Turonian & Senonian											
Section Number	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Aspect	4	3	3	1	4	3	3	4	4	1	3	4	1
2. Slope	3	3	3	4	3	4	3	3	2	3	3	2	3
3. Rock Bedding	3	3	3	3	3	3	3	3	3	3	3	3	3
4. Rock Outcrop	3	2	3	1	—	3	3	2	3	2	3	3	2
5. Rock Boulders	3	3	3	2	—	3	3	3	3	2	3	3	2
6. Terracing	4	6	4	6	—	6	4	4	6	6	4	6	4
7. Soil	3	3	3	3	—	3	3	3	3	3	4	4	3
8. Type of Cultivation or Cover	2	5	2	4	2	5	4	5	2	5	5	5	5
9. Extent of Cultivation or Cover	3	3	3	2	—	3	3	2	3	2	3	3	3
10. Erosion	2	2	1	2	—	2	2	2	1	2	1	1	2
11. Area in Dunums	247	238	354	1039	65	200	438	543	108	1461	728	448	1296
Remarks					V.B. U.A.								

Village / Geological Formation	Burqa Senonian																						
Section Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1. Aspect	3	1	3	4	2	4	3	1	4	4	3	4	3	3	3	3	2	1	4	2	3	1	3
2. Slope	4	4	4	4	4	4	4	3	3	3	3	3	4	4	3	4	4	3	4	4	3	4	4
3. Rock Bedding	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4. Rock Outcrop	2	2	2	2	2	2	3	3	3	3	3	—	2	2	3	3	3	3	3	3	3	2	2
5. Rock Boulders	3	3	2	2	3	3	3	3	3	3	3	—	3	3	3	3	3	3	3	3	3	3	3
6. Terracing	4	4	4	4	4	4	4	4	4	4	4	—	6	6	4	4	4	4	4	4	4	6	6
7. Soil	3	3	3	3	3	3	5	5	5	3	5	—	2	3	5	3	3	4	3	3	5	3	3
8. Type of Cultivation or Cover	5	5	5	5	5	4	2	4	2	5	2	2	5	5	2	4	5	5	5	5	2	5	5
9. Extent of Cultivation or Cover	1	2	2	2	1	1	3	3	3	2	3	—	1	1	3	3	3	3	3	3	1	1	3
10. Erosion	2	2	2	2	2	2	2	1	1	2	1	—	2	2	1	2	2	1	2	2	1	2	2
11. Area in Dunums	482	391	880	316	415	353	1635	578	357	511	470	353	705	581	421	425	1278	2570	1898	585	271	658	668
Remarks												V.B. U.A.											

Village / Geological Formation	Beit Iba Senonian									
Section Number	1	2	3	4	5	6	7	8	9	10
1. Aspect	3	3	4	1	1	4	1	2	4	2
2. Slope	4	3	4	3	4	4	4	4	4	4
3. Rock Bedding	3	3	3	3	3	3	3	3	3	3
4. Rock Outcrop	3	3	3	3	–	3	3	3	3	2
5. Rock Boulders	3	3	3	3	–	3	3	3	3	3
6. Terracing	4	6	4	4	–	4	4	4	4	6
7. Soil	3	3	3	4	–	5	5	5	5	3
8. Type of Cultivation or Cover	4	4	2	4	2	4	4	5	5	5
9. Extent of Cultivation or Cover	3	3	3	3	–	3	2	3	3	3
10. Erosion	2	1	2	1	–	1	1	2	2	2
11. Area in Dunums	860	293	545	175	62	260	136	664	497	307
Remarks					V.B. U.A.					

U.A. = Urban Area

V.B. U.A. = Village Built-up Area

Village	Rafidya & Juneid														
Geological Formation	Lower Eocene						Junction of Senonian & Lower Eocene								
Section Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Aspect	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1
2. Slope	4	4	3	3	3	3	3	3	4	4	4	3	3	3	4
3. Rock Bedding	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4. Rock Outcrop	2	2	3	3	3	3	—	3	3	3	2	3	2	2	1
5. Rock Boulders	2	3	3	3	3	3	—	3	3	2	3	3	3	3	2
6. Terracing	4	4	4	1	6	1	—	1	6	6	6	6	6	6	6
7. Soil	2	2	3	3	3	3	—	3	3	2	2	3	3	2	1
8. Type of Cultivation	5	2	5	4	4	2	2	2	5	5	5	5	4	2	8
9. Extent of Cultivation or Cover	2	3	3	3	3	3	—	3	3	1	2	3	3	3	1
10. Erosion	2	2	2	2	2	1	—	1	2	2	2	1	1	1	2
11. Area in Dunums	147	65	158	212	116	491	44	127	186	165	277	347	455	81	72
Remarks							V.B. U.A.								

Village	Beit Wazan															Burin	
Geological Formation	Junction of Senonian & Lower Eocene															Lower Eocene	
Section Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	1	2
1. Aspect	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	4	2
2. Slope	4	4	3	3	3	4	3	4	3	4	3	3	3	4	3	4	4
3. Rock Bedding	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4. Rock Outcrop	1	2	3	2	1	2	3	3	—	2	3	3	3	2	3	1	1
5. Rock Boulders	2	3	3	3	2	3	3	3	—	3	3	3	3	3	3	2	2
6. Terracing	6	1	1	4	4	6	4	4	—	6	4	4	4	4	4	6	6
7. Soil	2	3	3	3	3	3	5	5	—	5	5	5	4	2	5	2	2
8. Type of Cultivation	5	2	4	4	5	4	2	4	2	5	2	5	2	5	2	5	5
9. Extent of Cultivation or Cover	1	3	3	3	2	2	3	2	—	3	3	3	3	1	3	1	1
10. Erosion	2	2	2	2	2	2	2	2	—	2	2	2	2	2	1	2	2
11. Area in Dunums	650	171	198	541	382	277	380	339	40	98	54	122	29	241	20	294	415
Remarks									V.B. U.A.								

TULKARM SUB-DISTRICT.

Village	Kafr Rumman								Bal'a				Ramin													Shuweika					
Geological Formation	Senonian								Lower Eocene				Junction of Turonian & Senonian													Junction of Turonian & Senonian					
Section Number	1	2	3	4	5	6	7	8	1	2	3	4	1	2	3	4	5	6	7	8	9	10	11	12	13	1	2	3	4	5	6
1. Aspect	4	1	3	4	1	3	3	1	3	3	3	3	2	4	4	4	3	3	3	2	1	1	3	3	1	3	3	3	3	3	3
2. Slope	4	4	3	3	3	4	4	4	4	4	4	4	4	4	3	3	4	4	3	3	3	4	4	3	4	3	3	3	3	3	3
3. Rock Bedding	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4. Rock Outcrop	1	1	2	—	2	1	1	1	1	1	1	1	2	2	3	3	2	1	—	2	2	1	1	2	1	1	1	—	3	3	3
5. Rock Boulders	2	2	2	—	2	2	2	2	2	2	2	2	2	2	3	3	2	2	—	3	2	2	2	3	2	2	3	—	3	3	3
6. Terracing	6	6	6	—	2	2	6	6	6	2	6	6	4	4	6	6	6	6	—	6	6	6	6	2	6	4	2	—	4	4	4
7. Soil	1	1	3	—	3	3	1	3	1	3	1	1	2	2	3	3	2	3	—	2	2	2	2	2	2	2	3	—	3	3	3
8. Type of Cultivation or Cover	5	5	4	2	2	2	8	4	5	2	8	8	5	5	5	2	4	2	—	5	5	5	5	2	5	5	2	2	2	4	5
9. Extent of Cultivation or Cover	1	1	1	—	3	3	1	1	1	3	1	1	2	2	3	3	3	3	—	1	1	1	1	3	1	3	3	—	3	3	3
10. Erosion	2	2	2	—	2	2	2	2	2	2	2	2	2	2	1	1	2	2	—	2	2	2	2	1	2	2	2	—	1	1	1
11. Area in Dunums	1206	683	229	8	146	715	619	391	486	1266	295	285	554	1152	814	293	1373	162	23	619	553	417	577	451	1821	916	555	98	561	1341	737
Remarks				V.B. U.A.															V.B. U.A.									V.B. U.A.			

Village	Anabta																	Beit Lid						Kafr el-Labad								
Geological Formation	Turonian																	Senonian						Senonian								
Section Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	1	2	3	4	5	6	1	2	3	4	5	6	7	8	9
1. Aspect	1	3	1	3	3	3	1	1	1	1	3	1	1	3	3	3	4	1	4	1	3	1	1	4	1	2	2	1	1	4	2	1
2. Slope	3	4	4	4	3	3	4	4	4	3	3	4	4	4	3	3	2	4	4	3	4	4	4	4	4	4	4	4	3	3	4	4
3. Rock Bedding	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4. Rock Outcrop	2	2	2	2	2	—	2	2	3	3	3	3	2	1	2	2	3	1	1	1	1	1	1	1	1	2	2	1	—	1	1	2
5. Rock Boulders	2	2	2	2	2	—	2	2	3	3	3	3	2	2	2	2	3	2	2	2	2	2	2	2	2	2	2	2	—	2	2	2
6. Terracing	6	6	4	6	2	—	4	6	1	6	6	2	4	6	6	2	6	6	4	4	4	6	6	6	6	6	2	4	—	6	6	4
7. Soil	3	3	3	3	3	—	3	3	3	3	3	3	3	1	3	3	4	2	2	2	2	2	2	2	2	2	3	2	—	2	2	3
8. Type of Cultivation or Cover	5	4	2	5	2	2	2	5	2	2	2	2	4	8	5	2	5	5	5	2	5	5	5	5	2	5	2	5	4	2	4	2
9. Extent of Cultivation or Cover	1	1	3	1	3	—	3	1	3	3	3	3	2	1	1	3	3	1	1	3	2	2	1	1	2	1	2	1	—	3	1	3
10. Erosion	2	2	2	2	1	—	2	2	1	1	1	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2	—	2	2	2
11. Area in Dunums	161	425	925	1107	2350	111	739	550	359	703	1249	386	1923	1133	1296	78	1190	1512	726	111	1132	506	1098	156	252	515	243	237	15	373	802	265
Remarks						V.B. U.A.																							V.B. U.A			

U.A. — Urban Area

V.B. U.A. — Village Built-up Area

TULKARM SUB-DISTRICT.

Village Geological Formation	Dannaba Turonian						Tulkarm Senonian			
Section Number	1	2	3	4	5	6	1	2	3	4
1. Aspect	1	4	3	1	1	4	2	1	1	3
2. Slope	3	3	3	3	3	3	3	2	2	2
3. Rock Bedding	3	3	3	3	3	3	3	3	3	3
4. Rock Outcrop	2	3	2	2	2	—	3	—	3	3
5. Rock Boulders	2	3	2	3	2	—	3	—	3	3
6. Terracing	6	1	6	6	6	—	6	—	6	6
7. Soil	2	3	2	2	2	—	2	—	4	4
8. Type of Cultivation or Cover	4	2	4	2	2	2	4	—	5	5
9. Extent of Cultivation or Cover	2	2	1	2	2	—	2	—	3	3
10. Erosion	2	1	2	2	2	—	2	—	1	1
11. Area in Dunums	985	59	236	46	39	103	61	181	913	1298
Remarks						V.B. U.A.		U.A.		

U.A. = Urban Area
V.B. U.A. = Village Built-up Area

APPENDIX IV.

NABLUS-TULKARM CATCHMENT AREA

(27 VILLAGES)

1. SLOPE AND TERRACING.

TERRACING	SLOPE				
	Total Dunums	Safe Dunums	Moderate Dunums	Steep Dunums	Precipitous Dunums
1. Recent good contour terracing	1,735	—	—	1,205	530
2. Recent rough terracing	11,530	—	—	3,632	7,898
3. Old terraces in good repair	270	—	—	270	—
4. Old terraces neglected	67,478	—	—	20,455	47,023
5. Natural terraces neglected	—	—	—	—	—
6. No terracing	62,208	48	3,975	11,584	46,601
7. Terracing Impossible	—	—	—	—	—
TOTAL	143,221	48	3,975	37,146	102,052

2. SLOPE AND TYPE OF CULTIVATION.

TYPE OF CULTIVATION	SLOPE				
	Total Dunums	Safe Dunums	Moderate Dunums	Steep Dunums	Precipitous Dunums
1. Garden area (irrig. Vegetable growing)	—	—	—	—	—
2. Fruit trees	32,876	—	108	13,843	18,925
3. Vineyard	52	—	—	52	—
4. Ground crop with scattered fruit trees	21,371	48	—	5,858	15,465
5. Ground crop	85,829	—	3,867	17,007	64,955
6. Forest trees and high bushes	—	—	—	—	—
7. Forest ground cover	303	—	—	—	303
8. Stripped of Vegetation	2,790	—	—	386	2,404
TOTAL	143,221	48	3,975	37,146	102,052

3. SLOPE AND EXTENT OF CULTIVATION.

EXTENT OF CULTIVATION	SLOPE				
	Total Dunums	Safe Dunums	Moderate Dunums	Steep Dunums	Precipitous Dunums
1. 0 — 30%	31,298	—	—	3,480	27,818
2. 30% — 60%	33,838	—	—	5,268	28,570
3. 60% and over	78,085	48	3,975	28,398	45,664
TOTAL	143,221	48	3,975	37,146	102,052

4. SLOPE AND EROSION.

EROSION	SLOPE				
	Total Dunums	Safe Dunums	Moderate Dunums	Steep Dunums	Precipitous Dunums
1. Nil or gentle	31,837	48	3,975	20,955	6,859
2. Sheet erosion present	111,081	—	—	16,191	94,890
3. Gully erosion present	303	—	—	—	303
4. Denuded	—	—	—	—	—
5. Damaged by uncontrolled run-off from neighbouring plots	—	—	—	—	—
TOTAL	143,221	48	3,975	37,146	102,052

5. ROCK BEDDING AND EXTENT OF CULTIVATION.

ROCK BEDDING	EXTENT OF CULTIVATION			
	Total Dunums	0 – 30 % Dunums	30 – 60 % Dunums	60 % and over Dunums
1. Horizontal	—	—	—	—
2. Inclined	—	—	—	—
3. Irregular	143,173	31,298	33,838	78,037
4. Absent	48	—	—	48
TOTAL	143,221	31,298	33,838	78,085

6. ASPECT AND EXTENT OF CULTIVATION.

ASPECT	EXTENT OF CULTIVATION			
	Total Dunums	0 – 30 % Dunums	30 – 60 % Dunums	60 % and over Dunums
1. North	55,032	11,427	15,593	28,012
2. East	10,267	3,176	2,094	4,997
3. South	57,069	12,966	10,177	33,926
4. West	20,853	3,729	5,974	11,150
5. Nil	—	—	—	—
TOTAL	143,221	31,298	33,838	78,085

7. EXTENT OF CULTIVATION AND ROCKOUTCROP.

EXTENT OF CULTIVATION	ROCK OUTCROP				
	Total Dunums	Very Abundant Dunums	Abundant Dunums	Sparse Dunums	Absent Dunums
1. 0 – 30%	31,298	17,731	11,819	1,748	—
2. 30 – 60%	33,838	3,817	24,539	5,482	—
3t 60% and over	78,085	5,239	24,010	48,788	48
TOTAL	143,221	26,787	60,368	56,018	48

8. SLOPE AND ROCK OUTCROP.

SLOPE	ROCK OUTCROP				
	Total Dunums	Very Abundant Dunums	Abundant Dunums	Sparse Dunums	Absent Dunums
1 Safe	48	—	—	—	48
2. Moderate	3,975	—	—	3,975	—
3. Steep	37,146	2,337	12,985	21,824	—
4. Precipitous	102,052	24,450	47,383	30,219	—
TOTAL	143,221	26,787	60,368	56,018	48

9. AREAS OF THE DIFFERENT CATEGORIES OF SOIL.

SOIL.	AREAS IN DUNUMS.
1. Absent	4,779
2. Shallow	42,805
3. Adequate	71,826
4. Deep	8,504
5. Deep but poor	15,307
Total	143,221

10. EXTENT OF ROCK BOULDERS.

ROCK BOULDERS.	AREAS IN DUNUMS.
1. Abundant large	—
2. Abundant small	67,064
3. Sparse	75,573
4. Absent	584
Total	143,221

AH/31/11/41. C.S.O.

Subject Soil Conservation Board
Bulletin No. 1 – Nablus – Tulkarm
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and Mr. N. A. Pharaon

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GOVERNMENT OF PALESTINE

C.S.O.

SUBJECT: Fayad el Wagih (deceased) Claim for Compensation by dependents

GPP. 8307—1000—2-7-39—[illegible]

CONNECTED FILES

NUMBER AND YEAR	SUBJECT